T’es COP ou pas CAP ? / To COP or not to COPE?

Sustainable Buildings & Cities Symposium
6th of March, SMA-BTP, Paris
Operating experience

Living Places,
Danish low-carbon housing

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Velux
Create well-being for people and planet by transforming spaces using daylight and fresh air.
Innovation is in our DNA.

For the past 20 years, the VELUX Group has initiated and participated in more than 30 demonstration buildings exploring the future of healthy buildings through full scale experiments. By monitoring these buildings and studying the interaction between them and their occupants, we have created a blueprint for future housing that offers solutions to some of the most important societal and environmental issues.

- 30+ Experiments
- 22 countries
- 20 years
- 100+ partners
Living Places
More sustainable living environments for people and planet.
Healthy principle
Benefiting both people and planet, through the careful selection of materials, building techniques, utilities, and design configuration of indoor and outdoor spaces.

Shared principle
Strengthening the sense of community by combining private dwellings with shared spaces, resources, outdoor areas, and amenities.

Simple principle
Offering a simple modular building system that requires little to no maintenance and can easily be upgraded, repaired and fitted with smart appliances.

Adaptive principle
Creating a scalable solution that responds to the needs for more ways of living.

Scalable principle
By creating homes that challenge the way we design, plan, and finance homes we can unlock housing for the many.
Healthy Planet

What if we could reduce the environmental impact, while enhancing the health and wellbeing for people?

Benefiting both people and planet, through the careful selection of materials, building techniques, utilities, and design configuration of indoor and outdoor spaces.

Environmental impact of a typical single family house in Denmark

- Carbon emitting materials and utilities
- High maintenance landscape
- Standard indoor climate, thermal environment, noise control, and visual connection

Environmental impact of the Living Places

- A building that minimizes CO2 emissions in operational energy
- Fossil-free shared mobility
- Healthy indoor climate, thermal environment, noise level, and visual connection
- Reduced building footprint frees up space for carbon sequestering landscape

NB: The benchmark house is based on the average of the typical Danish single house and was calculated by Artelia in 2022.

CO2

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CO2
Optimization on each component

Diagram showing the comparison between each element. This shows where we get the biggest savings.
What if we could reduce the environmental impact, while enhancing the health and wellbeing for people?

Benefiting both people and planet, through the use of healthy building principles. Focusing on daylight, thermal indoor environment, indoor air quality, acoustics and connections to the outdoors we ensure homes that enhance the wellbeing of people.

**Health impact of a typical single family house in Denmark**

**Poor daylight conditions**

**Health impact of the Living Places**

**Daylight provisioning**

**Stack effect**

**Fresh air**

**Active house score: 1**

By integrating healthy house principles, we achieve a higher Active House score and, thereby, an indoor environment that is three times better.

**Indoor climate class 3**

The reference house’s lack of healthy building principles led to a low Active House radar score, signifying a subpar indoor environment.

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Daylight
How we measure

With dynamic daylight simulations it is possible to consider factors such as orientation, location, seasons and occupant requirements.

The method used is the DA300/50, a target of 300 lux at least 50% of the yearly hours.

Targets
Active House Radar

Daylight autonomy
1 2 3
>70% >60% >50%

Reflectance
Ceiling  Wall  Floor
0.7  0.5  0.2

Living Places 2024
Thermal environment
How we measure

To identify the risk of overheating, a dynamic thermal simulation tool is used to determine hourly values of indoor operative temperature at room level.

Targets
Active House Radar

Max operative temperature
- 1
- 2
- 3

$<25.5^\circ C$  $<24^\circ C$  $<23^\circ C$

Min operative temperature
- 1
- 2
- 3

$>21^\circ C$  $>20^\circ C$  $>19^\circ C$

Air speed
- Winter: 0.20m/s
- Summer: 0.50m/s

To identify the risk of overheating, a dynamic thermal simulation tool is used to determine hourly values of indoor operative temperature at room level.
Indoor air quality
How we measure

Multiple parameters define the indoor air quality, such as level of particles, Carbon dioxide, Volatile organic compounds (VOC) from materials, radon and relative humidity and mold.

Targets
Active House Radar
Fresh air supply (ppm CO₂)
1 2 3
<400 ppm <500 ppm <800 ppm
Living Places Copenhagen

In April 2023, the VELUX Group, EFFEKT, Artelia, and Enemærke & Petersen opened the doors to Living Places Copenhagen in the Railway District in Copenhagen – the first prototypes of the overall Living Places concept.

The project aims to lead the way in the building industry and show how rethinking buildings can help solve some of the global climate and health challenges.

The exhibition consists of seven prototypes – five open pavilions and two finished homes in full scale.
The Pavilions

01 Resource
Practical space at Living Places Copenhagen including storage, waste management and energy harvesting from solar panels.

02 Hygge - timber frame Living Place
Fully functional home in timber frame with natural ventilation and wood/wood windows.

03 Tracks
A space for smaller meetings, events and workshops.

04 Materials
Exploring the materials of Living Places Copenhagen

05 Haven - CLT Living Place
Fully functional home in cross-laminated timber (CLT) with hybrid ventilation and wood/aluminum windows.

06 Events
A space for events, meetings, workshops and larger gatherings.

07 Info
A joint exhibition space shared with Baneby Konsortiet, providing visitors information on Living Places Copenhagen and the future development of the old railway district “Jernbanebyen”
Scaling Living Places

An important aim and aspect of the Living Places project is to scale the concept to the rest of Europe and to apply Living Places more broadly through knowledge sharing.

The VELUX Group has entered a partner agreement with the Dutch house builder Bouwgroep Dijkstra Draisma on building more sustainable housing in the Northern part of the Netherlands.

With this partner agreement, Bouwgroep Dijkstra Draisma is the first house builder to use the Living Places concept in their development and construction processes and to build the first prototype in the Netherlands based on the concept.
Visit Living Places
Copenhagen

Take a virtual tour at
livingplaces.velux.com
Transforming Spaces

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